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ABSTRACT

The manual is intended to help teachers of gifted elementary students teach independent learning skills. As a framework, it may be used to provide goals, objectives, conditions, and criteria for developing individualized educational programs (IEPs): to develop evaluation strategies: or to design instructional activities. Objectives and preassessment activity ideas are listed for three main processes (sample subtopics in parentheses): research (sources and methods of data collection, methods of recording, interpretation and evaluation of research): problem solving (problem identification and analysis, anticipation of alternatives, evaluation process): and organization (personal and interpersonal skills). Each section includes an evaluation sheet. (CL)

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Nautilus

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An Independent Study Framework for Gifted Students K-8

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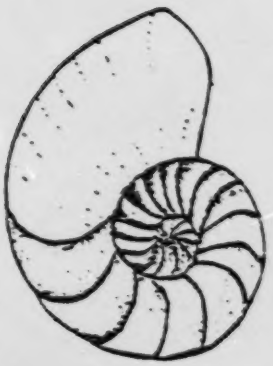

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Forward

The beauty of the chambered nautilus is derived from the graceful shape and the circular markings on its shell. Cut crosswise, the interior reveals a series of chambers, each larger than the next, which serve as successive homes for the nautilus. These chambers are built one upon the other enlarging as the nautilus grows. The last chamber, its final home, will protect the nautilus so that it can survive in the sea.

The selection of the nautilus as the title for this framework is not accidental. The nautilus shell represents a consecutive and sequential process of growth toward independent existence which is the ultimate goal for survival. The capacity to learn independently, is perhaps, the most important ability which gifted students can possess; it not only challenges their own talents, but also, ultimately, serves society.

This manual was developed for teachers of the gifted to assist these teachers in guiding their students to become independent learners. It reaffirms the belief that a major goal of an enrichment program for the gifted must be to develop and encourage the attitudes and skills which will serve the learners into adulthood. Survival in the 21st century will require the gifted not only to be able to adapt to social and technological changes but also contribute, in a great measure, toward solving the challenging problems of the future.

It is hoped that the framework contained in Nautilus will provide teachers of the gifted with a guide for developing independent study skills.

Using this outline, the teachers can ascertain the sequential development of independent study skills, select the areas which they think are appropriate for the students and develop related activities. Pre-assessment activities have been included to aid the teacher in selecting areas that are appropriate for individual students. With the exception of these pre-assessment activities, no other activities have been provided. The development of other appropriate activities is in the domain of the teacher. One of the priorities for in-service programs should be the development of appropriate activities built upon the framework in Nautilus. Next, it is hoped that the activities will be field-tested and evaluated by teachers of the gifted. Once the activities have been tested, they can then be included in Nautilus.

Each section also includes a checklist to be used to record pupil progress. The checklists have been designed to be reproduced so that they can be kept in each student's folder as an aid in I E P development. The pre-assessment activities included in Nautilus may also serve as evaluation tools.

The areas outlined in Nautilus may be used in developing group activities which help gifted children become familiar with and utilize sources of data, assist them in organizing their abilities, as well as guide them in the problem-solving process. The framework can also serve as a guide for teachers who initiate individual and small group investigations of real problems. Using elements of actual problems, this manual can assist the teacher in determining the steps and concepts necessary to reach a solution to a reality-oriented problem. Thus, Nautilus can provide the basis for designing and implementing effective enrichment programs for the gifted in the area of independent study.

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Introduction

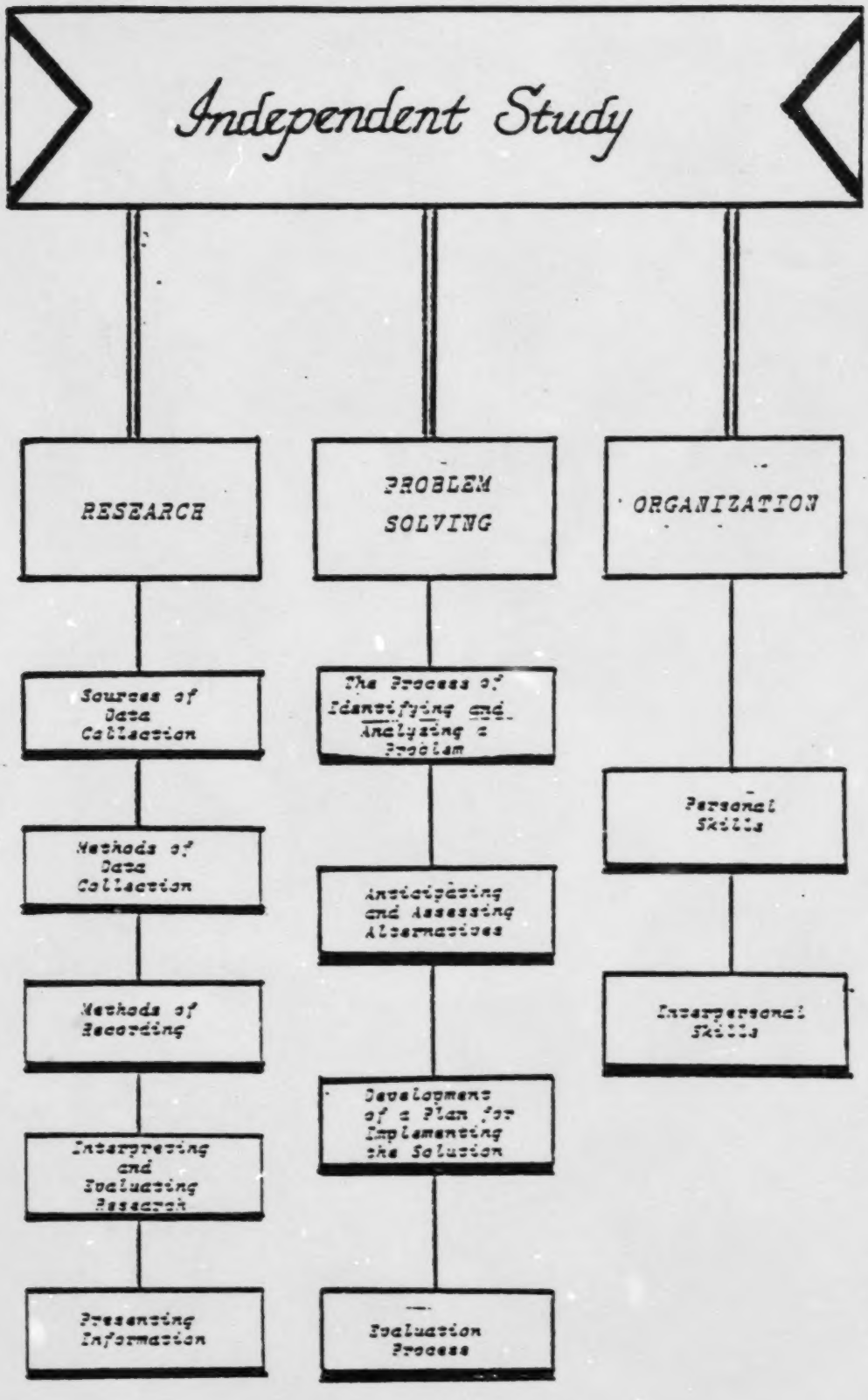
Independent study is the ability to learn or act with a minimum of assistance. This implies that the ability includes the process to motivate and organize oneself and then to evaluate the actions and the products created. This places the responsibility for learning upon the student and not the teacher. The ability to become an independent learner does not occur naturally in many gifted children. It must be nurtured and facilitated in a sequential way by the teacher, beginning with the basic ability to identify appropriate sources to the more complex skills of organizing steps in solving a specific problem.

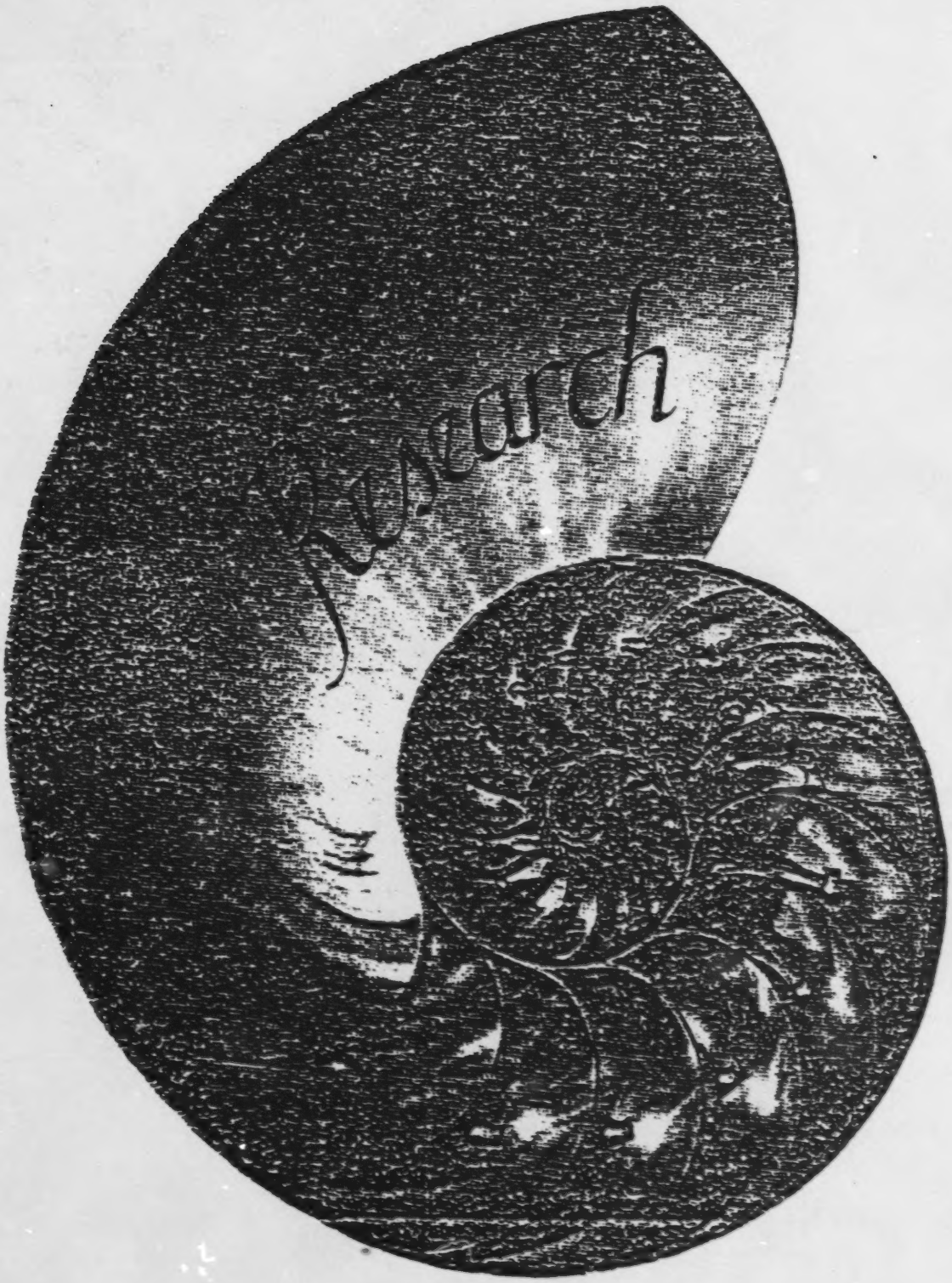
Nautilus: An Independent Study Framework for Gifted Students was developed as a tool for teachers of gifted enrichment programs from kindergarten through eighth grade. It is intended to serve as a guide in the following ways:

1. *As a model for the instruction of independent study skills.*
2. *To provide goals, objectives, conditions and criteria to be incorporated in Individualized Education Programs (I E P) for gifted students.*
3. *To develop criteria for individual pupil evaluation in the area of independent study skills.*
4. *As a framework for the development of activities by the teachers of the gifted.*

The word framework implies an outline or skeleton to be built upon or "fleshed out" with substance and embellishments. Therefore, this document is not intended to be a complete or dogmatic course of study. It has been designed for teacher input through the use of an expandable notebook. With Nautilus the teacher can then proceed to develop a program for gifted students which will serve both the needs of the students and the teacher.

COMPONENTS OF INDEPENDENT STUDY

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RESEARCH

Research is the process of systematically examining and investigating a problem or topic by interpreting and evaluating data in order to develop an idea or product. The sources of data collection are not limited to the library but may include community resources such as institutions, agencies, and individuals. Although the final product of the research product frequently is a written document, gifted children should be encouraged to express their information visually, auditorially, kinesthetically and verbally as in animated films, musical compositions, dance, and drama so that their abilities and talents will be challenged.

I. Sources of Data Collection

A. Collecting Information in the Library

1. Library Orientation

OBJECTIVE	
TO BE AWARE OF THE AREAS IN THE PHYSICAL SETTING OF THE LIBRARY BY:	locating the areas in the library • reference • periodical • card catalogue • fiction/non fiction • audio-visual identifying the names of resources in the library • dictionaries Thesaurus Biographical Dictionary • encyclopedias and yearbook World Book Who's Who • special references Book of Quotations Almanac Atlas Index to Periodical Literature Guinness Book of World Records Famous First Facts
PRE-ASSESSMENT ACTIVITIES Library Lift-Off Map-A-Reference	

LIBRARY ORIENTATION

TITLE: Library Lift-Off

MATERIALS:

Copies of teacher-developed labeled floor plan of the school library, a set of samples including examples from the various sections and references in the library. A sample set may include:

Scissors, paste, and crayons.

PROCEDURE:

Distribute floor plan, set of examples, scissors, paste and crayons to each student. Students are to cut out the reference samples and paste the pieces at the appropriate location on the floor plan. The teacher can then assess each student's knowledge of locating and identifying references and their placement in the library.

COMMENTS and/or OPTIONAL EXTENSION:

The teacher may wish to have the students develop one large library floor plan and samples of references which can be used as an instructional aid for review and reinforcement.

LIBRARY ORIENTATION

TITLE: Map-A-Reference

MATERIALS:

Copies of teacher-developed unlabeled floor plan of school library, crayons, or markers for each student.

PROCEDURE:

Distributs a library floor plan and markers/crayons to each student. Studerts will then identify and color the various sections of the library according to an established color code. For example:

Reference section- red
Card Catalogue- blue
Audio-visual- orange

The teacher can then assess each student's knowledge of the library lay-out by checking his/her map. The teacher may wish to have each student also include examples of specific items that can be found in each area.

COMMENTS and/or OPTIONAL EXTENSION:

I. Source of Data Collection

A. Collecting Information in the Library

2. Utilizing the Appropriate Resources in the Library

OBJECTIVE

TO BE ABLE TO UTILIZE THE APPROPRIATE AREAS OF THE LIBRARY BY:

identifying resources for research

- determining and understanding specific needs.
- becoming familiar with the resources.
- selecting proper resources.

locating the needed information

- using the card catalogue
- using the index, glossary, and table of contents.
- using audio-visual equipment
- applying the Dewey Decimal System.

interpreting the located information

- interpreting maps
- interpreting charts, graphs, tables.
- using varied reading styles.

PRE-ASSESSMENT ACTIVITIES

WHERE WOULD YOU FIND?
CONNECT-A-FACT

Utilizing the Appropriate Resources in Library

TITLE: Where Would You Find?

MATERIALS:

a "Where Would You Find?" worksheet for each student, oak tag strips @ 6" by 1", magic markers, 3" by 5" cards, pencils.

PROCEDURE:

Write the following questions on oak tag strips and allow the children to select a strip sight unseen. Ask the children to copy the question on a 3" by 5" card, find the answer in the library and list the source. As children find one source they may select another question strip.

1. The year John Lennon graduated from High School.
2. The number of soft pretzels consumed by Pennsylvanians in 1977.*
3. The birthday of Jackie Robinson.
4. The number of bushels of corn produced by the U.S. in 1976.
5. Find 3 synonyms for the word "ablution".
6. The meaning for the word "hirsute".
7. How many people in the U.S. chew bubble gum.
8. A quotation by Abraham Lincoln.
9. The author of the saying "Early to bed, early to rise, makes a man healthy, wealthy, and wise".
10. The author of the book, A Door in the Wall.

*Most school libraries would not have this information. Ask child what other sources might be used.

COMMENTS and/or OPTIONAL EXTENSION:

Utilizing the Appropriate Resources in the Library

TITLE: Connect-A-Fact

MATERIALS:

Connect-A-Fact worksheet for each student, library.

PROCEDURE:

Each student receives a worksheet and proceeds independently in the library to locate the needed information to answer each question. It is important for the teacher to emphasize the sequential development of this activity. Each correct answer forms the basis for the following question.

An example of this activity has been included and may serve as a model for development of a Connect-A-Fact Activity appropriate for the resources available in your school library.

Developed by Christine Lewis, M.C.I.U. #23

COMMENTS and/or OPTIONAL EXTENSION:

CONNECT-A-FACT

*NAME*_____

1. *On what river is Tulsa, Oklahoma located?*
2. *What is the length of the river on which Tulsa is located?*
3. *Take the length of this river and think of it as a date. Add 164 to it and find out the name of the first artist to arrive in America in this year.*
4. *This artist's name has three parts to it. Take the first three letters of the last part of the name and look it up in the telephone book, (Eastern Montgomery County). The second listing will be a man. What is his first name?*
5. *Take the first three letters of this man's first name and add "ology" to it. Give a synonym for it that begins with "e". On the same page you will find the name of a type of tree that gives oil. What is it?*
7. *On what continent is this tree mainly found?*
8. *On this continent you will find a city called Theodore (about 25 Latitude).*
9. *Subtract 5 from this number. Now, match each digit to its corresponding letter in the alphabet according to the letter's position. (example:257= BEG because B is the second letter of the alphabet, E is the fifth, etc.) You will get a man's last name.*
10. *What was this man's famous saying from the book of fables he wrote?*
11. *In what city was he born?*
12. *What city, which is also the name of an African country, is directly North of this man's home town?*
13. *Who was the ruler of this country in June, 1975?*
14. *Take the last three letters from this man's name and add "dzen" to it. Find out the first name of this physician from Eastern Montgomery County and his specialty.*
15. *Take the man's first name and give each letter a number according to its position in the alphabet (example: A=1, B=2, C=3). Now get the name of a different person by matching the letters up with this code:*

1	2	3	4	7	9	16	18	19	20	21	22
F	A	R	L	L	I	T	E	W	Y	D	N

N.B. You will have extra numbers.

16. *Find the name of the book by this author that tells about the terrible winter of 1880-1881.*

N.B. Take the letters of the title of this book and match them with the code.

Title Letters	N		G	I	O	L		T		H	W		E	
Code	S	or I	A	R	N	A	A	or	V	R	S		K	or E

*Book Title*_____

*New Words*_____

CONNECT-A-FACT

Answer Sheet

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
_____
_____
_____
_____
7. _____
8. _____
9. _____
10. _____
_____
_____
_____
11. _____
12. _____
13. _____
14. _____
_____
15. _____
16. _____

I. Sources of Data Collection

B. Collecting Information from Other Sources

OBJECTIVE	
TO BE ABLE TO COLLECT INFORMATION FROM SOURCES OUTSIDE OF THE LIBRARY BY:	reading printed material • directory: telephone book • catalogue: Sears, Roebuck & Co. • brochure: travel folder • schedule: time table, agenda meeting with consultants • individuals in organizations: Members of Chamber of Commerce • individuals in vocational fields: physician, architect, photographer • individuals in avocational fields: local historian studying in an outside environment • public place: museum, university • ecological excursion: park, stream • community resource: shopping center • simulation activity: commercial and teacher prepared materials- "Lost on the Moon" (see appendix)
PRE-ASSESSMENT ACTIVITIES	
DISNEY WORLD EXCURSION TAKE-A-TERRIFIC TOUR	

Collecting Information From Other Sources

TITLE: Disney World Excursion

MATERIALS:

telephone directory, catalogues(Sears. Roebuck and Co.), brochures for accomodations in and around Disney World, schedules for transportation to Disney World, paper.

PROCEDURE:

Each student is to plan a weekend trip to Disney World using the resources available. The plan is to include:

1. a list of at least three persons or agencies for consultation in planning the trip and how each can be reached.
2. lodging accomodations including location, rates and facilities available.
3. tow or more types of transportation that could be used, departure and arrival times, and costs.
4. list four articles of clothing appropriate for the trip and their respective costs according to a catalogue.

The recording of data on a worksheet may prove valuable for better student organization and teacher assessment. A sample worksheet has been included and may be adapted for your needs.

COMMENTS and/or OPTIONAL EXTENSION:

Collecting Information from Other Sources Pre-Assessment Research

Disney World Excursion

	Information Found		Source (page)
People/ Agencies	Person / Agency	Phone Number or Address	
	1.		
	2.		
	3.		
Lodging	Name of Place:		
	Rates:		
	Facilities Available:		
	Criteria for Selection:		
Transportation	First Choice	Second Choice	
	Type:		
	Cost:		
	Departure/Arrival Times:		
	Criteria for Selection:		
Clothing	Article of Clothing	Cost	
	2.	2.	

Collecting Information From Other Sources

TITLE: *Take-A-Terrific Tour*

MATERIALS:

Community Resources.

PROCEDURE:

Tell students: "You will be entertaining an out-of-state girl/boy of your own age. This person is interested in (each student may fill in the special interest of his/her guest). It is your job to plan an interesting and exciting stay for this person, planning activities dealing with his/her special interest. You must include the following in your plan:

1. *a visit to a public institution*
2. *an outdoor activity*
3. *a visit to a community resource which offers information about the visitor's interest*
4. *a visit with a person knowledgable in the visitor's special interest area*

Students then proceed to develop their plan using appropriate resources.

COMMENTS and/or OPTIONAL EXTENSION:

II. Methods of Data Collection

A. Primary Sources of Information

OBJECTIVE	
TO BE ABLE TO COLLECT DATA FROM PRIMARY SOURCES OF INFORMATION USING:	observations • physical attributes: size, color, texture as found in 2 and 3 dimensional art form • physical and chemical changes as in metamorphosis: plant and animal growth, diazo photography. • behavioral changes such as social interaction: observing groups of students at play. • personal attitudes: an individual's reaction to his/her environment as kept in a journal. experiments • hypothesis: tentative assumption based on references from acquired information. • rules of procedure: steps in a specific order and the consideration of variable factors that may influence the conclusio • observations. • conclusions: judgement or influence from what has been observed.
PRE-ASSESSMENT ACTIVITIES	
MYSTERY GUEST ARE YOU A GOOD WITNESS?	

Methods of Data Collection, Observation

TITLE: Mystery Guest

MATERIALS:

Prearranged Mystery Guest.

PROCEDURE:

Prior to the class meeting, the teacher makes arrangements for an individual to disrupt the class in an obnoxious, argumentative fashion. This exchange should be planned to last a few minutes. After the interruption, students are quizzed on their observations of the incident. Teachers may have students independently list their observations or react to specific questions such as: eye color of the intruder, clothing worn, etc.

COMMENTS and/or OPTIONAL EXTENSION:

METHODS OF DATA COLLECTION, OBSERVATION

TITLE: Are You a Good Witness?

MATERIALS:

a copy of "Are You a Good Witness?" question sheet for each student, a copy of "Are You a Good Witness?" picture scene for each student.

PROCEDURE:

"Are You a Good Witness?" picture scene and question sheets are distributed to each student. The students are given two minutes to carefully observe the picture scene (question sheet remains face down). At the end of the two minutes students place picture sheet face down and are allowed four minutes to complete the given question sheet.

Manchester, R. Mammoth Book of Fun and Games. New York: Hart Publishing, 1977

COMMENTS and/or OPTIONAL EXTENSION:

Answers to question sheet

1. Second floor	11. No
2. Fourth Street	12. Yes
3. At 3 o'clock	13. Ohio
4. No	14. No
5. No	15. Two
6. 384	16. Yes
7. Yes	17. Yes
8. The butcher	18. No
9. Three	19. Yes
10. No	20. No

ARE YOU A GOOD WITNESS?

Do you observe or do you merely look? When your eye takes in a scene, does it register detail or does it just gather a vague, fleeting impression? The following test is designed to see how well you can report the facts.

Examine the picture for two minutes. Try to remember as much as you can. Then, cover the picture with a piece of paper. Answer the questions about details depicted in the picture.

Be careful to observe the time limit. You have two minutes to examine the picture and two minutes to answer the questions.

TIME LIMIT: 4 MINUTES

1. *On what floor was someone looking out the window?*_____
2. *On what street was the Bakery Shop?*_____
3. *What time of day did the accident take place?*_____
4. *Was the person who was hit a male?*_____
5. *Was there a traffic light on the corner?*_____
6. *What was the license number of the parked car?*_____
7. *Was the driver a female?*_____
8. *Which storekeeper was standing on the street?*_____
9. *How many policemen were at the scene?*_____
10. *Were there more than 10 people in the crowd?*_____
11. *Was the butcher's first name Max?*_____
12. *Were there any children in the crowd?*_____
13. *From what state was the car that hit the bicycle?*_____
14. *Was it a four-door?*_____
15. *How many trees were in the picture?*_____
16. *Were there any animals on the street?*_____
17. *Was the butcher's address 23 State Street?*_____
18. *Was the ad on the wall for cigarettes?*_____
19. *Was the weather mild?*_____
20. *Was the driver of the car alone?*_____

COLA
REFRESHING
CHANGE
BAKERY
110
L. GIRALDI
MAX SHORE
SHOE REPAIR
25
27
FOURTH ST
STATE ST
BUTCHER
LEG OF LAMB
TODAY
JEWELER
364

II. Methods of Data Collection

A. Primary Sources of Information (continued)

OBJECTIVE	
TO BE ABLE TO COLLECT DATA FROM PRIMARY SOURCES OF INFORMATION BY:	collecting information from individuals through • interviews: obtaining information as by a reporter or television commentator. • surveys: determining points of view, attitudes or facts by interview or questionnaires. • questionnaires: sets of questions for obtaining useful or personal information from individuals. • lectures: oral presentation before a group. collecting information from original books and documents • autobiographies • letters • deeds • newspapers • journals
PRE-ASSESSMENT ACTIVITIES MEET THE PRINCIPAL SELECT-A-CELEBRITY DOCUMENT DETECTIVE	

Methods of Data Collection

TITLE: Meet the Principal

MATERIALS:

tape recorder, taped interview with the principal, evaluation sheets for each student.

PROCEDURE:

Prior to this activity the teacher must tape record an interview she/he had with the school principal. Before presenting this interview to the students, the teacher indicates what information she/he was seeking from the interview. Students then listen to the interview. Each student then evaluates the interview using the following guidelines:

1. *Questions asked.*
2. *Climate of interview.*
3. *Apparent preparation for interview.*
4. *Reactions to the interview.*

COMMENTS and/or OPTIONAL EXTENSION:

Methods of Data Collection

TITLE: Select-A-Celebrity

MATERIALS:

paper, pencil for each student.

PROCEDURE:

Give students a choice of three celebrities who are representing different careers: sports, politics, entertainment. Each student is to develop a plan for an interview with the celebrity of his/her choice. The plan is to include the following four sections:

1. What do you need to do to prepare for the interview?
2. How will you set up the interview?
3. What questions will you ask during the interview?
4. How will you evaluate the interview?

COMMENTS and/or OPTIONAL EXTENSION:

Methods of Data Collection

TITLE: Document Detective

MATERIALS:

one copy of an original document for each student.

PROCEDURE:

Teacher distributes a copy of an original document such as a deed, passport, photograph of a tombstone, diary to each student. Students then individually list all facts and inferences they can collect from examining the document. After an established time period, student will share their lists and discuss their findings.

COMMENTS and/or OPTIONAL EXTENSION:

II. Methods of Data Collection

B. Secondary Sources of Information

OBJECTIVE	
TO BE ABLE TO COLLECT INFORMATION BY USING:	secondary sources • books: fiction, non-fiction. • periodicals: news, literary, professional. • dictionaries: meanings, applications. • films: travel, instructional, documentary. • filmstrips: instructional, creative, reporting. • records: instructional, creative, documentary.

III. Methods of Recording

OBJECTIVE	
TO BE ABLE TO UTILIZE DIFFERENT METHODS OF RECORDING BY USING:	systems of note-taking • paraphrase: writing information in complete sentences using own ideas. • summary: writing main ideas and relevent points in own words. • quotations: writing direct quotations from sources. • outline: identifying main ideas and recording them in topic sentences or paragraph form. • combination: integrating methods describe above. systems of record keeping • charts: diagrams, maps, or graphs. • journals: accounts or records of experiences, ideas or reflections kept regularly for private use. • tables: information in rows and columns. • pictorial representations: photographs, pictures, filmstrips, films, videotape systems of documenting information • the format of American Psychological Association (A P A), University of Chicago.(see appendix for an exampl
PRE-ASSESSMENT ACTIVITIES GET IT STRAIGHT MYSTERY PORTFOLIO	

Methods of Recording

~~TITLE~~: Get it Straight

MATERIALS:

paper, a copy of a story or article for each student. (a copy of "Beetle Mania" from the Evening Bulletin has been included in the appendix as a possible selection for this activity).

PROCEDURE:

Distribute a copy of a story or article to each student. Allow student time to independently read and take notes on the given selection. The teacher can then use samples of student note taking to determine individual needs.

COMMENTS and/or OPTIONAL EXTENSION:

Methods of Recording

TITLE: The Mystery Portfolio

MATERIALS:

a Mystery Portfolio for each student, including a: chart, journal, table, pictorial-representation.

PROCEDURE:

Each student is given a Mystery Portfolio packet. He/she must then examine the contents of the packet in order to record inferences from the given information. Students must write a paragraph describing how they interpret the situation depicted through the contents of the Mystery Portfolio. Students will then tell how each item contained in the packet offered useful information in reaching their conclusions.

COMMENTS and/or OPTIONAL EXTENSION:

IV. Interpreting and Evaluating Research

OBJECTIVE

TO BE ABLE TO INTERPRET AND EVALUATE INFORMATION BY:

validating material

- *comparing sources*
- *evaluating reliability of sources*

integrating information from different sources by combining the elements of a topic or an idea

- *gathering the data*
- *classifying data*
- *evaluating data*
- *selecting ideas*
- *synthesizing appropriate ideas into written or visual forms*
  - *graphs*
  - *charts*
  - *pictures*
  - *plans*
  - *models*
  - *reports*

drawing conclusions

- *from the reporting of facts*
- *from opinions as in editorials*
- *by making inferences*

PRE-ASSESSMENT ACTIVITIES

JOURNALISTIC JUMBLE

Interpreting and Evaluating Research

TITLE: *Journalistic Jumble*

MATERIALS:

Journalistic Jumble packet for each student. The packet should include facts about a given topic from a wide variety of sources addressing the many aspects within a topic. Current social and political issues with many points of view are suggested.

PROCEDURE:

Distribute a Journalistic Jumble packet to each student. The students then proceed to meet a time deadline by writing a news article from the information given in the packet. The article should be informative, descriptive, exciting and should include a visual aid; chart, graph, plan, picture, as well as the narrative.

COMMENTS and/or OPTIONAL EXTENSION:

V. Presenting Information

OBJECTIVE	
TO BE ABLE TO PRESENT INFORMATION USING:	visual forms • 2 and 3 dimensional representations-pictures, sculpture • mobiles • murals • filmmaking slides animation films experimental techniques • television auditory forms • tapes • live performance kinesthetic • dance • poetry • essay • newspaper/magazine • journal oral • speech • debate • monologue • report

STUDENT _____

DATE ENTERED PROGRAM _____

EVALUATION SHEET

objective	pre-assessment activity	pre-assessment date	evaluation activity	date	comments
library orientation					
using primary sources					
using secondary sources					
methods of recording					
interpreting and evaluating research					
presenting information					

Growing

PROBLEM SOLVING

Problem solving is the process of identifying and analyzing a problem. It involves anticipating and assessing possible alternative methods to arrive at a solution; the development of a plan for implementing this solution; and the evaluation of both the end result and the entire problem solving process.

I. The Process of Identifying and Analyzing a Problem

A. Focusing on the Problem

OBJECTIVE TO BE ABLE TO IDENTIFY A PROBLEM BY:	stating the situation in clear terms. reviewing the available information redefining the problem statement clearly
PRE-ASSESSMENT ACTIVITIES MOTHER GOOSE'S PROBLEMS	

Focusing on the Problem

TITLE: Mother Goose's Problems

MATERIALS:

copies of two or three Mother Goose rhymes for each student: such as Humpty Dumpty, Little Boy Blue, or Little Miss Muffet; paper, pencils.

PROCEDURE:

Distribute copies of two or three Mother Goose rhymes to each student. Have the students read the rhymes and select one for use during the activity. Then each student will analyze the rhyme for conflicts within the content, stating every problem found within the rhyme and those characters affected by these conflicts.
For example: When examining the nursery rhyme Little Miss Muffet, both Little Miss Muffet and the spider seem to have their problems. Miss Muffet has been frightened away from her comfortable dining accomodations. On the escape she may have even lost her curds and whey. The spider, on the other hand is left alone, hungry and wondering why Miss Muffet doesn't like him. For years Miss Muffet has received all the sympathy in this nursery rhyme. But, now it's easy to see that the poor little spider also had its share of problems too.

Adapted from: The book of think, Little, Brown & Co.

COMMENTS and/or OPTIONAL EXTENSION:

I. The Process of Identifying and Analyzing a Problem

B. Studying the Problem

OBJECTIVE TO BE ABLE TO ANALYZE THE PROBLEM BY:	examining the different parts through carefully investigating each of the elements found within the problem. sequencing and ordering through classifying and/or prioritizing the elements within the problem. distinguishing between the different and/or conflicting factors found within the problem as a means of recognizing divergence.
PRE-ASSESSMENT ACTIVITIES STORY WITH HOLES	

Studying the Problem

TITLE: Story With Holes

MATERIALS:

a copy of a story with holes for each student. Stories from books: Stories With Holes-Mandala Corp., or news article may be adapted for this activity. (An example of a news article appears in the appendix.)

PROCEDURE:

Each student receives a copy of the story with holes. After reading the story each student is to analyze the problem presented in the story by:

- identifying the problem
- noting all facts given within the story
- stating and justifying a hypothesis

The following sample story has been taken from "A Scream ... a shot, two weeks of terror", an article which appears in the appendix.

A family of four--mother, father, daughter, and son--were camping with several other families. During the night the woman and her daughter were awakened by gunfire and a piercing scream, "Don't shoot him in the head". The two quickly fled from the campsite, fearing for their lives. For the next two weeks the mother and daughter lived in the forest eating berries, keeping warm by covering themselves with dirt, and trying to keep ahead of their pursuers.

COMMENTS and/or OPTIONAL EXTENSION:

II. Anticipating and Assessing Alternatives

A. Methods for Developing Alternatives

OBJECTIVE

TO BE ABLE TO GENERATE A VARIETY OF POSSIBLE SOLUTIONS THROUGH THE METHOD OF:

brainstorming in which as many ideas as possible are suggested with deferred judgement.

force-fit which forces a relationship between two previously unrelated objects: telephone-recorder.

part-changing in which one part of an existing article is changed: touch-tone telephone.

checkerboard in which a grid is developed using two dimensions of the problem.

checklist by which a list of verbs is to suggest different ways of changing a problem, i.e. S C A M P E R (see appendix).

PRE-ASSESSMENT ACTIVITIES

MYSTERY OBJECT

Methods for Developing Alternatives

TITLE: Mystery Object

MATERIALS:

object which is uncommon to students (ex. antique tool), paper, pencil for each student.

PROCEDURE:

The teacher holds up the uncommon object for all the students to see, then passes the object around the room for everyone to examine.

Ask each student to list as many uses as possible (at least four) for the object. Tell the students they have three minutes to complete their list.

After three minutes, the students are given an additional three minute period to double the number of items on their list. At the completion of the timed activity, students share their uses with the group.

COMMENTS and/or OPTIONAL EXTENSION:

The teacher explains to students that they will have a chance to determine what the object is by asking questions about it. Several ground rules may be established:

1. Students may ask only "yes-no" questions.
2. A limit may be imposed on the number of questions asked (ex. 20 questions).
3. If someone incorrectly guesses the objects name prematurely, he is automatically out.

II. Anticipating and Assessing Alternatives

B. Process of Assessing Alternatives

OBJECTIVE

TO BE ABLE TO REVIEW AND SELECT APPROPRIATE IDEAS BY:

examining all alternative solutions and their implications.

evaluating alternative solutions for their appropriateness and feasibility.

eliminating unsuitable solutions.

modifying appropriate alternatives.

choosing the best solution.

PRE-ASSESSMENT ACTIVITIES

" THE DUMP GAME "

Process of Assessing Alternatives

TITLE: The Dump Game (Town of Middleboro)

MATERIALS:

a copy of the Middleboro map for each student

PROCEDURE:

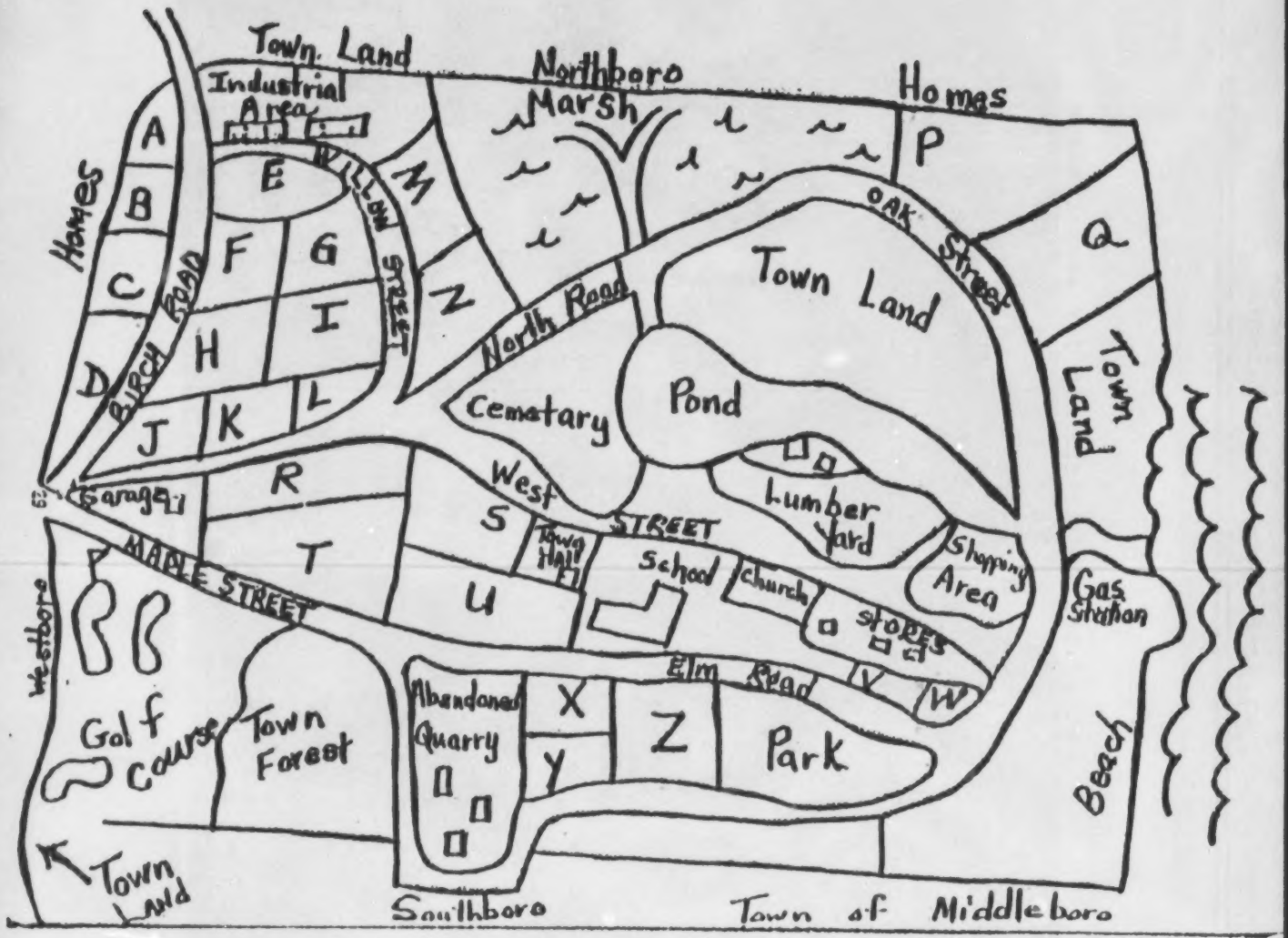
Distribute a Middleboro map to each student. Then give the following background information:

> The town of Middleboro has a rubbish disposal problem. Until now all the town members have taken care of their own trash, with the result that the town lands, the marsh, the quarry, ponds, streams, beaches and forests have become quite littered, polluted, and unattractive. The store areas are infested with rodents. Individual burning of trash is becoming a health hazard.
>
> Money has been assigned for the construction of a town incinerator. A town meeting is to be held to decide where it is to be built. Its location must have the approval of a majority of four-fifths of the members of the community.

Keeping in mind this information, students are to pretend to be the owner of one of the properties lettered A-Z, the dairy, golf course, garage, lumberyard, gas station, or represent the school or the church. Students are then given time to work out solutions that reflect their own interests as residents of Middleboro. These solutions are then to be presented at the town meeting so that a group decision can be reached.

Patterson, J. Why Doesn't An Igloo Melt Inside, Memphis: Memphis City School Systems, 1973.

COMMENTS and/or OPTIONAL EXTENSION:


Town Land
Northboro
Homes
Industrial Area
Marsh
A
B
C
D
E
F
G
H
I
J
K
L
M
N
P
Q
R
S
T
U
V
W
X
Y
Z
Homes
Birch Road
Willow Street
North Road
Oak Street
Town Land
Cemetary
Pond
Town Land
Garage
West
Street
Lumber Yard
Shopping Area
Gas Station
Maple Street
Town Hall
School
Church
Stores
Elm Road
Westboro
Golf Course
Town Forest
Abandoned Quarry
Park
Beach
Town Land
Southboro
Town of Middleboro

III. Development of a Plan For Implementing the Solution

A. Developing the Plan

OBJECTIVE	
TO BE ABLE TO DESIGN A SYSTEMATIC PROCEDURE FOR ATTAINING THE SOLUTION BY:	stating the possible solutions and limiting constraints.
	listing the steps for achieving the solution.
	constructing a time sequence.
	obtaining necessary materials.

III. Development of a Plan for Implementing the Solution

B. Implementing the Plan

OBJECTIVE	
TO BE ABLE TO UTILIZE THE DEVELOPED PLAN IN ORDER THAT THE SOLUTION CAN BE PUT INTO ACTION BY:	following the steps outlined in the plan.
	recording progress as the plan is implemented.
	modifying the plan as needed.
	assuring that the implemented solution will be part of an ongoing process.

IV. Evaluation Process

A. Evaluation of End Result

OBJECTIVE	
TO BE ABLE TO ASSESS THE IMPLEMENTED SOLUTION BY:	determining the criteria for evaluation.
	determining whether the solution resolved the problem.
	determining whether the solution meets the anticipated outcome(s).
	recommending modifications.

IV. Evaluation Process

B. Evaluation of Problem Solving Process

OBJECTIVE	
TO BE ABLE TO ASSESS THE PROCEDURE USED BY:	determining criteria for process evaluation.
	evaluating the process according to criteria.
	recommending improvements for the process.

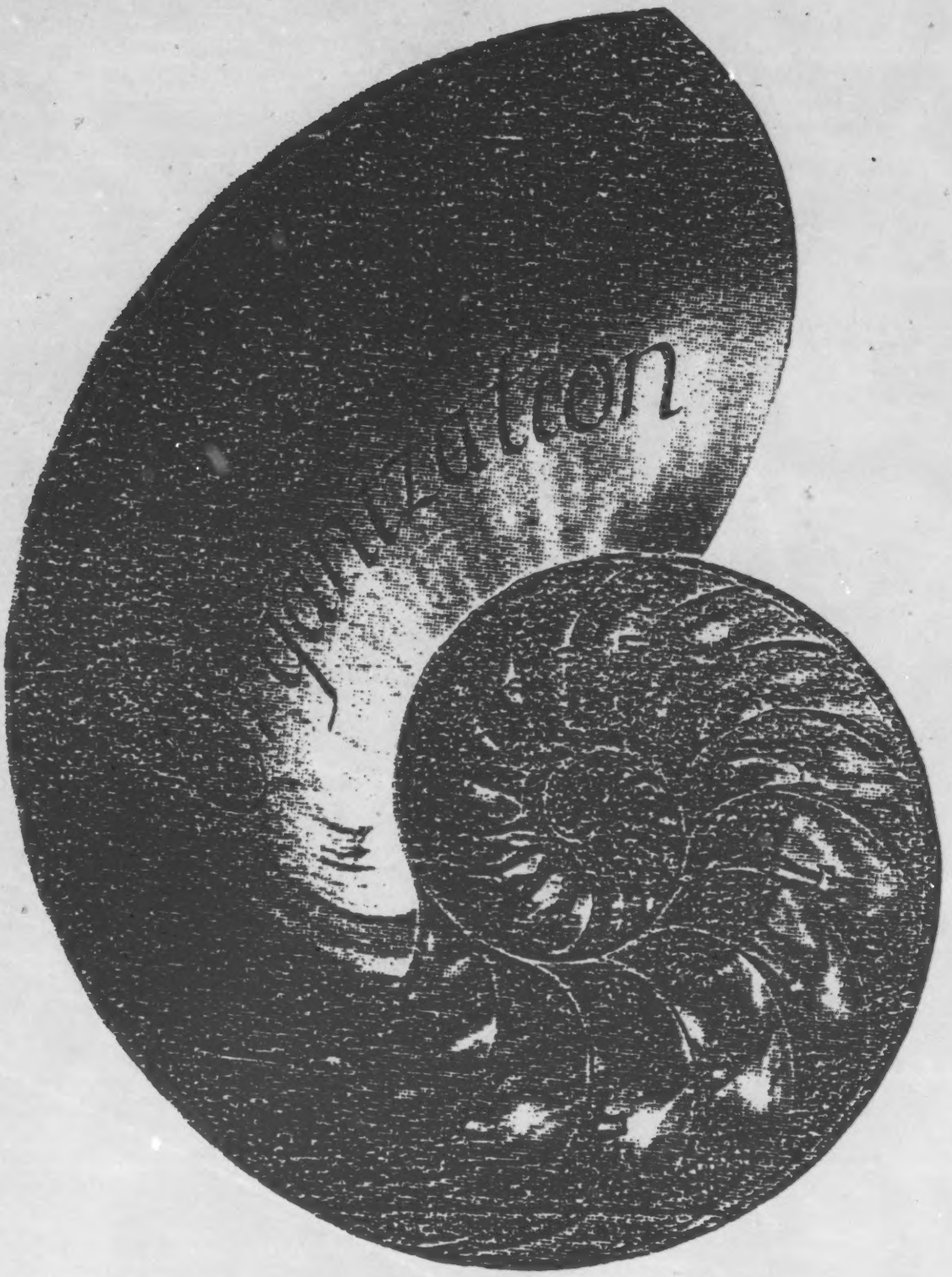
PROBLEM SOLVING

STUDENT _____

DATE ENTERED PROGRAM _____

EVALUATION SHEET

objective	pre-assessment activity	pre-assessment date	evaluation date	date	comments
identify the problem					
analyze the problem					
generate a variety of solutions					
review and select appropriate ideas					
develop a systematic procedure for attaining the solution					
utilize the developed plan					
assess the implemented solution					
assess the procedures used					



ORGANIZATION

Organization is the process of giving order to one's self. It involves considering time, materials, and procedures so that a goal or plan can be fulfilled efficiently. Organization not only applies to an individual's work, but also involves the development of interpersonal skills necessary for a group to achieve a goal. In order to develop these skills, it is essential for students to recognize their own learning styles and respect those of others.

I. Personal Skills

A. Planning the Procedures

OBJECTIVE	
TO BE ABLE TO ESTABLISH A REALISTIC COURSE OF ACTION BY:	developing a plan looking at the task as a whole: surveying basic information about a subject. setting limits through the selection of one area within the subject. identifying the important and related topics within the area. setting goals: developing personal objectives and expectations. setting up time intervals in a sequential progression in order to meet a predetermined deadline, i.e. checklists, charts. considering materials: the items necessa to reach goals, the location of materials, and anticipated costs. surveying facilities: physical settings needed in which to work. identifying resources: reference materia or consultants needed to gather information. assessing motivation, capabilities, and limitations of self. evaluating feasibility: practibility of the topic, time, materials and facilities.
PRE-ASSESSMENT ACTIVITIES ACTIVITY PLANNERS, INC.	

Planning the Procedures

TITLE: Activity Planners, Inc.

MATERIALS:

paper, pencils.

PROCEDURE:

Students are to develop a plan for an enrichment activity to be used with their class. The plan must include:

1. activity title and subject area
2. goals for the activity
3. time limit and sequences
4. materials needed and their locations
5. physical setting for the activity (indoors, outdoors)
6. resources used for developing plan
7. feasibility for the class
8. procedure to carry out the activity

The teacher then evaluates the individual plans and selects the plan which best meets the above requirements to be used the following enrichment session.

COMMENTS and/or OPTIONAL EXTENSION:

I. Personal Skills

B. Implementing the procedures

OBJECTIVE	
TO BE ABLE TO CARRY OUT A COURSE OF ACTION BY:	employing the established plan.
	completing sequential steps according to a time schedule: checklists, charts, personal time line.
	reviewing progress: teacher-pupil conferences, student log.
	revising procedures, accomplishments, resources, time and materials as needed.
	considering personal qualities: responsibility, perserverance, attitude, dependibility and work habits.
PRE-ASSESSMENT ACTIVITY	
BUILDING A BRIDGE	

Implementing the Procedures

TITLE: Bridge Building

MATERIALS:

stack of newspaper and masking tape for each group of students, large dictionary and large cardboard box for each group of students.

PROCEDURE:

Divide the class into groups of six or eight students. Each group is given a stack of newspapers, a roll of masking tape and a large cardboard box. Students are then instructed to plan and construct a bridge which will support the dictionary and be high and wide enough for the cardboard box to pass under. Ten minutes is given for the planning period. During this time, students are not allowed to begin the construction. At the end of the planning period, students tell their plan to the teacher and evaluate the plan. Students are them given fifteen minutes for bridge construction. At the end of the building period, students discuss the activity according to how their plan was followed, reviewed, and revised as the construction took place.

Hawley, R. and Hawley, I. Developing Human Potential. Amherst, Mass.: E R A Press, 1975.

COMMENTS and/or OPTIONAL EXTENSION:

II. Interpersonal Skills

A. Individual Responsibilities

OBJECTIVE	
TO DEVELOP AN AWARENESS OF AN INDIVIDUAL'S ROLE IN A GROUP BY:	assuming responsibility for being a productive member within a group. demonstrating responsiveness to the feelings and ideas of others. displaying commitment to the group. realizing the influence one has on the group both as a participant and non-participant. respecting the learning styles of others; influences of the environment, individual physical requirements, emotionality, and sociological needs on the learning process.
PRE-ASSESSMENT ACTIVITY SPACE TOWER	

II. Interpersonal Skills

B. Group Responsibilities

OBJECTIVE	
TO EFFECTIVELY WORK WITH OTHERS TOWARD A COMMON GOAL BY:	developing an atmosphere of cooperation and trust: respecting opinions of others, encouraging others to respond, providing positive feedback. understanding the various group roles that develop in a group; such as leader, mediator, isolate, deviant, gate-keeper. recognizing and resolving group problems. working to meet group deadlines. respecting the learning styles of others: individual influences of the environment, physical requirements, emotionality and sociological needs.
PRE-ASSESSMENT ACTIVITY SPACE TOWER	

Interpersonal Skills

TITLE: Space Tower

MATERIALS:

a pack of 3 by 5 index cards and a roll of masking tape for each group of students; books of equal size and weight so that each group has one book; process observer sheet. (see appendix).

PROCEDURE:

Divide class into groups of six to eight students. (A process observer may be included in each group. See appendix for a Process Observer sheet.) Each group receives materials and is instructed to design and build a tower which will support the given book as high from the floor as possible. The tower must be free-standing. Ten minutes is allowed for the planning. During the planning period, students may talk to each other about the plan but may not begin to construct the tower. At the end of the planning time, the students must report their plan to the teacher and evaluate the group's interaction as well as the plan. Students are then given a ten minute building period during which no talking is permitted. At the end of the building period, students discuss their interaction using the process observer sheet as a guide.

Hawley, R. and Hawley, I. Developing Human Potential. Amherst, Mass.: E R A Press, 1975

COMMENTS and/or OPTIONAL EXTENSION:

ORGANIZATION

STUDENT _____

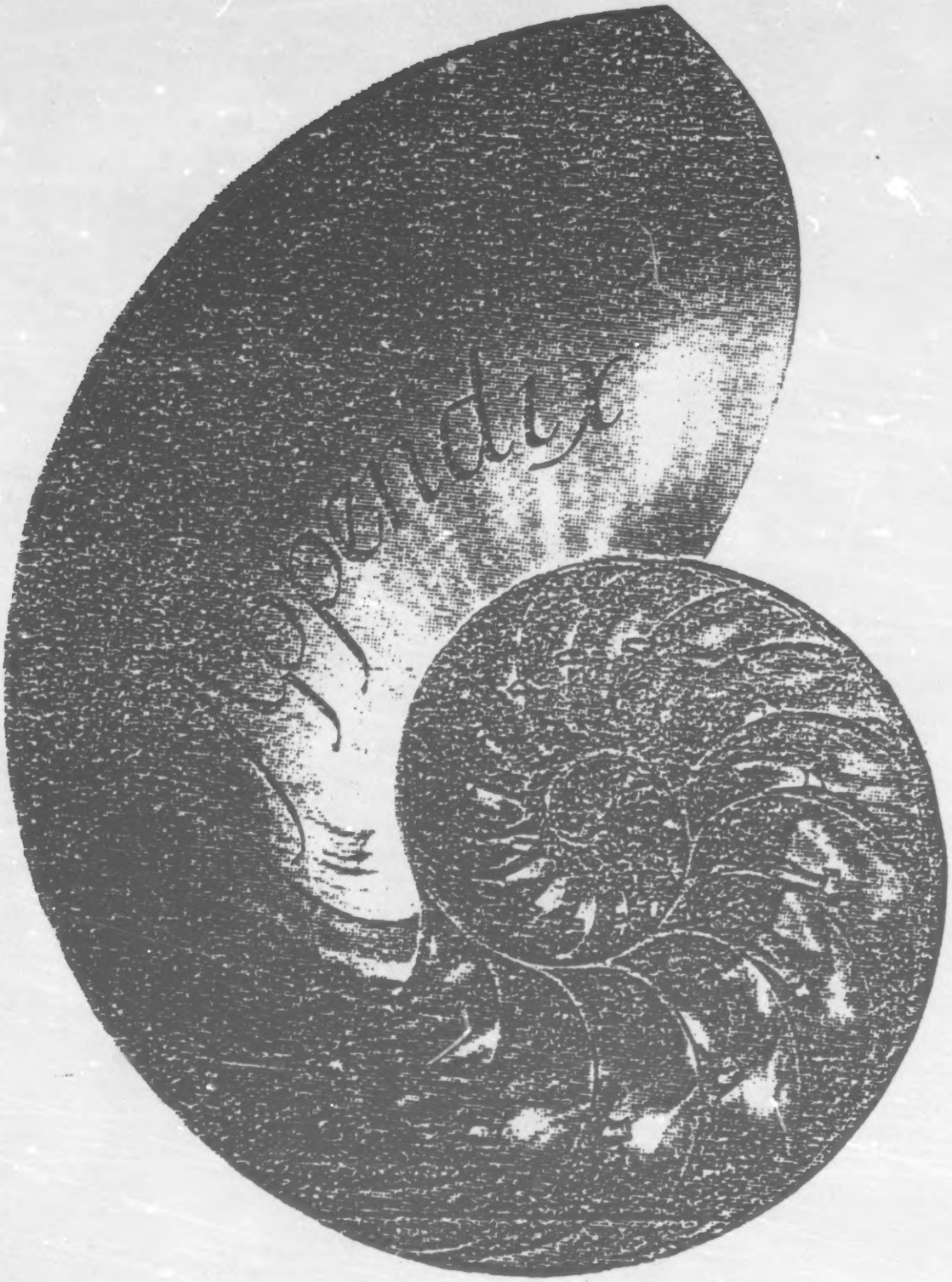
DATE ENTERED PROGRAM _____

EVALUATION SHEET

objective	pre-assessment activity	date	evaluation activity	date	comments
Personal Skills					
Planning					
overview of task					
set limits					
set goals					
develop time line					
collect materials					
physical facilities					
resources					
personal qualities					
Utilizing the Plan					
completing steps					
reviewing progress					
revising procedures					

EVALUATION SHEET (continued)

objective	pre-assessment activity	pre-assessment date	evaluation activity	evaluation date	comments
Interpersonal Skills					
understanding role of the individual in the group					
functioning in the group					



Format selected from the Publication Manual of the American Psychological Association, (second edition) A.P.A. Washington, D.C. 1977.

Books

Pisces, R.A. An Introduction to Sea Shell Collecting. New York: Macmillan, 1979.

Winters, O.I. (Ed) Encyclopedia Americana. (Vol. 1) New York: School Press, 1969.

Periodicals

(no author) How to Raise Worms, Time, September 27, 1978, pp. 47-49.

Little, I.M. Making Money for Fun and Profit, National Geographic Magazine, 29, 173-179.

Films

Wolff, L. (Producer) Bat Man Strikes Again New York: Time-Life Films, 1970.

Eberle's "SCAMPER" technique is an example of an idea checklist containing verbs that may be used to generate new ideas. "SCAMPER" is an effective acronym for remembering to use all possibilities. Eberle's checklist is as follows:

S Substitute
C Combine
A Adapt
M Modify
P Put to other uses
E Eliminate
R Rearrange

R.F. Eberle (in Parnes, Noller, and Biondi, 1977)

DECISION BY CONSENSUS

Instructions: This is an exercise in group decision-making. Your group is to employ the method of *Group Consensus* in reaching its decision. This means that the prediction for each of the 15 survival items *must* be agreed upon by each group member before it becomes a part of the group decision. Consensus is difficult to reach. Therefore, not every ranking will meet with everyone's *complete* approval. Try, as a group, to make each ranking one with which all group members can at least partially agree. Here are some guides to use in reaching consensus:

1. Avoid arguing for your own individual judgments. Approach the task on the basis of logic.
2. Avoid changing your mind only in order to reach agreement and avoid conflict. Support only solutions with which you are able to agree somewhat, at least.
3. Avoid "conflict-reducing" techniques such as majority vote, averaging, or trading in reaching decisions.
4. View differences of opinion as helpful rather than as a hindrance in decision-making.

On the "Group Summary Sheet" place the individual rankings made earlier by each group member. Take as much time as you need in reaching your group decision.

INSTRUCTIONS

Instructions: You are a member of a space crew originally scheduled to rendezvous with a mother ship on the lighted surface of the moon. Due to mechanical difficulties, however, your ship was forced to land at a spot some 200 miles from the rendezvous point. During re-entry and landing, much of the equipment aboard was damaged and, since survival depends on reaching the mother ship, the most critical items available must be chosen for the 200 mile trip. Below are listed the 15 items left intact and undamaged after landing. Your task is to rank order them in terms of their importance for your crew in allowing them to reach the rendezvous point. Place the number 1 by the most important item, the number 2 by the second most important, and so on through number 15, the least important.

Boxes of matches _____

Food concentrate _____

50 ft. of nylon rope _____

Parachute silk _____

Portable heating unit _____

Two .45 calibre pistols _____

One case dehydrated Pet Milk _____

Two 100 lb. tanks of oxygen _____

Stellar map (of moon's constellation) _____

Life raft _____

Magnetic compass _____

Signal flares _____

First aid kit containing infection needles _____

Solar-powered FM receiver-trans. _____

5 gallons of water _____

GROUP SUMMARY SHEET

Individual Predictions

	1	2	3	4	5	6	7	8	9	10	11	Group Prediction
Box of matches												
Food concentrate												
50 ft. of nylon rope												
Parachute silk												
Portable heating unit												
Two 45 cal. pistols												
One-case dehydrated milk												
Two tanks oxygen												
Stellar map												
Life raft												
Magnetic compass												
Signal flares												
First aid kit w/needles												
Solar-powered radio												
5 gallons of water												

Figure 5-1

Little or no use on moon	*15* Box of matches
Supply daily food required	*4* Food concentrate
Useful in tying injured together, help in climbing	*6* 50 ft. nylon rope
Shelter against sun's rays	*8* Parachute silk
Useful only if party landed on dark side	*13* Portable heating unit
Self-propulsion devices could be made from them	*11* Two .45 calibre pistols
Food, mixed with water for drinking	*12* Dehydrated Pet Milk
Fills respiration requirement	*1* Two tanks of oxygen
A principal means of finding directions	*3* Stellar map
CO_2 bottles for self-propulsion across	*9* Life raft
Probably no magnetic poles; useless	*14* Magnetic compass
Distress call when line of sight possible	*10* Signal flares
Oral pills or injection medicine valuable	*7* First aid kit with injection needles
Distress signal transmitter, possible communication with mother ship	*5* Solar-powered FM receiver-trans.
Replenishes loss from sweating, etc.	*2* Five gallons of water

Scoring Instructions for Decision by Consensus

The prediction is that the group product will be more accurate than the average for the individuals. The lower the score, the more accurate. A score of "0" is a perfect score.

Individual Score. Each individual can score his own sheet. As you read aloud to the group the correct rank for each item, they simply take the difference between their rank and the correct rank on that item and write it down. Do this for each item and add up these differences—DISREGARD "+" and "–".

To get the average for all individuals, divide the sum of the individual scores by the number of individuals in the group. Compute the group score in the same way you computed each of the individual scores. If our hypothesis is correct, the group score will be lower than the average for all individuals.

Possible Questions for the Group

1. Did the group really go by consensus? Or did we gloss over conflicts?
2. Did the group stay on the intellectual or task aspects or did we stop to examine our process to see how we could work more effectively?
3. How satisfied were we with the way the group worked? How efficient were we?

1 ——————————— 9

very poor — excellent

4. How satisfied are you (as members) with the group?
5. How much influence did you feel you had as an individual on the group decision?
6. Did the group listen to you? Ignore you?
7. Did you stay involved in the exercise or did you give up?
8. In what ways could you change or improve your interaction with others?

Bulletin Thurs. June 28, 1979

Beetle mania

Museums find flesh-eating insect a dangerous ally

By SAMUEL ALLIS
Special to The Bulletin

These are the ultimate scavengers.

Lovers of darkness, dilapidation and heat, dermestid beetles are among the most voracious creatures on earth. These tiny, black, hard-shelled insects can be found almost everywhere in the world. Just look for a carcass — and there they are. They arrive before the vultures and stay long after the big birds have gone.

Even now they are chomping away in humid, sticky rooms of major museums all over the world.

Ten years after modern technology put a ride on the backs of museum entomologists dedicating these primitive creatures to clean the skeletons of animals to be, exhibited to the public or catalogued in collections.

But their place in museum collections is a double-edged sword. Dr. Jiri Petrichek, head of the systematics department of the Academy of Natural Sciences in Philadelphia, says scientists there are more concerned with getting rid of the little beasts than putting them to work.

"They're a constant museum pest," he says, and points out that dermestids can do great damage to a museum's collection — by eating it — unless the beetles are properly contained. Also, as the academy does not prepare exhibits, but rather operates on an exchange and loan basis, dermestids are not needed — and are never used there — for bone cleaning.

Watching dermestids at work stripping a skeleton reminds one of piranhas. These greedy beetles have been known to sink wooden ships and can chew through lead with ease. Their passion, though, is meat. They eat all the time. They have to. If they run out of food, they eat each other.

"It can turn into a regular Dolores Paro situation," lamented Douglas Johe, who shepherds the dermestid colony at the Smithsonian's National Museum of Natural History.

"Sometimes I hear them in there," said Steve Medina. "It's like a humming sound. It sounds like they're chomping away."

Medina, senior technician in the osteology laboratory at the American Museum of Natural History in New York, pointed to a trunk that is kept in perpetual darkness. A sign on the door labeled "Visitors" said "Just in case."

Inside, in the trunk and tiny

Is it a bug or a blessing?

humidity, thousands of dermestids consume small mammals, leaving their bones bare and intact, which is the way the museum wants them.

The process is not without its perils, though. Medina simply rolls his eyes at the idea of a mass dermestid escape from their black room.

"Forget about it, man, the damage they would do if they got out into the collection. They go for the hair, the soft stuff first, then the fatty meat and the tail," he said. "Don't forget about it."

To avoid this nightmare, which is a worry to every museum that uses them, Medina brings in exterminators once a week to spray the rooms surrounding the beetle colony. As a checkup, he keeps generous amounts of potash crystals in the animal skin in the museum collections.

Dermestids used to be the scourge of the fur trade and, according to John, bounties were offered to those who could rid hide warehouses of them. He tells the story, repeated by other dermestid cognoscenti, of a wooden sailing ship full of penguin carcasses which almost sank when it arrived in port in this country years ago because its hull had been riddled with dermestids during the voyage. Other ships, he had heard, had sunk of similar circumstances.

Five of them wouldn't do much damage," Medina explained. "But 10,000 of them together and you've something going."

There is something charming about august institutions such as the Smithsonian and New York's Museum of Natural History, which have the most sophisticated tools available, employing beetle labor. But it makes sense; the bugs take no salary, they work unbelievable hours, they never strike, and they're always looking for more to do.

"They're very prolific, they're easy to keep, they're cheap, and they eat almost anything," explained Dr. Frank Greenwell, a museum specialist in the Division of Mammals at the Smithsonian.

Their only failing is that they work their grisly wonders only on smaller mammals. Anything above the size of a raccoon is boiled, bathed in chemical solutions or macerated, a tedious process in which bacteria slowly separate the meat from the bone while in water. There is no guarantee with any of these methods that the articulation, or structure of the skeleton, will remain intact. But articulation is not crucial with these animals, as their bones can be reassembled fairly easily.

With anything roughly up to the size of a raccoon, however, articulation is crucial for display as the bones are fragile, and until dermestids were first used in museum work in 1922, museum osteology technicians like Medina were doomed to extended bouts of time-consuming maceration. The state of the art took a giant leap forward with the introduction of the beetles who compare to the older methods as jet engines do to turboprops. Today, museums of the highest standing speak proudly of their dermestid colonies.

The dermestids like it dark and humid, and that's what they get. Their room is windowless, and the humidity is kept high with the temperature at an even 80 degrees.

The beetles themselves are kept in six large rectangular wooden boxes in which they perform their various cleaning jobs. Beds of cotton are placed in each one for egg laying so they won't feel compelled to burrow into or through the wood. Medina likes to keep them working continually and will give them a new carcass as soon as they finish with an old one if he can. If not, he will give them some of the meat he has roughed out of other carcasses.

It is impossible to estimate how many beetles are in Medina's colony. He simply says "thousands." His colony is a good deal larger than the one in the Smithsonian, which lives in two such boxes. Because his crew is bigger, he can get the job done faster. "It's the ratio of bug mass to meat mass that is crucial," John explained.

The stench of the carcasses in the airless room is as strong as the scenes in the boxes are grisly when Medina turns on the light. In one box, the dermestids happened to be cleaning the remains of a snake, a large bird, and the head of a badger.

They could leave a human "squeaky clean" in about a week, Medina speculated, but noted they had never been used for this purpose.

He turned off the light and carefully locked the door. As he was leaving, he confided, "I don't like the idea of being buried."

APPENDIX

A scream . . . a shot, 2 weeks of terror

Philadelphia Inquirer June 7 1979

Associated Press

LAKE ELSINORE, Calif. — It began with gunfire in the night and the piercing shout: "Don't shoot him in the head!" Peggy Hunter grabbed her 12-year-old daughter, and they fled for their lives.

For two weeks, authorities said, they ran through the forest, living off berries and roots, sleeping under a covering of dirt, keeping a step ahead of the men they were sure had killed 10 of their fellow campers, including Mrs. Hunter's husband and son.

Their terror was real, but the murders never happened. The pursuers with dogs actually were search crews sent out to look for the mother and girl, believed to have been kidnaped.

And what about the shots and blood-curdling cry? Merely the killing of a raccoon so it could be tested for rabies, Riverside County sheriff's deputies said Monday.

Sunday morning, the pair emerged from the Cleveland National Forest, dressed in tatters, exhausted and hungry. They headed home to recover from an ordeal authorities related this way:

On June 16, a camper at a Seventh-Day Adventist youth camp was bitten by a raccoon, and camp officials shot the animal.

Mrs. Hunter, 34, and her daughter, Jennifer, were awakened by the shot. They also heard someone say, "Don't shoot him in the head," and the sound of fireworks being set off in the area.

It sounded like mass murder to the woman and her daughter.

Mrs. Hunter bit a hole in the rear of the tent, and she and Jennifer, both clad only in nightgowns, fled into the forest about 40 miles southeast of Los Angeles.

For two weeks they ran, terrified that the killers were on their trail. They ate berries and yucca roots and kept warm at night by covering themselves with dirt.

Meanwhile, search teams in mountain garb combed the area, fearing that the mother and daughter had been kidnaped, perhaps by a rowdy motorcycle gang that had been bothering other campers.

To Mrs. Hunter, the rescuers were pursuers and she was not about to stop unless she saw a police uniform, Riverside County Deputy Ralph Woodworth explained.

"She thought they were searching for the last survivors of this mass murder. She thought that only she and her daughter had survived," Woodworth said.

After several days of hiding, Mrs. Hunter began to hallucinate, he said, and would run away whenever she or her daughter saw someone.

Jennifer "tried to keep her mother rational," Woodworth said. "She kept quoting things from the Bible."

The mother and child were nearly naked when a passing motorist picked them up Sunday. They went home, suffering mental and physical fatigue and weight loss, but otherwise in good condition, authorities said. The family was not available for comment.

PROCESS OBSERVER SHEET

Directions: Your job is to observe the group as it works. Try to keep your eyes on how the group functions and what individuals do and say to help the group with its task. Resist the temptation to become involved with the task itself--let the group work on that while you watch how they work. Familiarize yourself with the items below so that you will have specific things to watch for. If there is more than one process observer, you may wish to divide the items among you, and you will also be able to divide the group members among you so that you can follow individuals more closely. At the end of the task you will be asked to report to the group on the questions below.

1. What was the atmosphere in which the group worked? (Joyful, frivolous, tense, excited, etc.)

2. How did the group reach decisions?

3. How did the group handle conflict? (Humor, sarcasm, open confrontation, shouting, withdrawing, etc.)

4. To what extend were all the members of the group involved in the task? Were there any procedures which helped people get involved?

5. How did the group treat male/female differences?

6. How did the group decide who would speak and when?

7. How well did the group members listen to each other?

8. Were there any leaders? How did they arise?

9. How did the group delegate responsibility?

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Biography

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The elements of independent study: research, problem-solving, and self organization were developed as goals in Gemini: Gifted Education Manual for Individualizing Networks of Instruction. We are indebted to the staff of Project Gemini for generating the goals which have served as a foundation for Nautilus.

COMPONENTS OF INDEPENDENT STUDY